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SIGNALMENT RECORDING APPARATUS

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2 Claims. (Cl. 88—24)

This invention relates to improved apparatus for acquiring, displaying, transmitting and recording the signalment of man. More particularly the invention relates to apparatus utilizing photochemical, photoelectrical, or xerographic means for simultaneously recording the ridge patterns of a plurality of fingers, for example, of an individual either separately or in combination with a facial photograph of the individual.

The idea of recording his unique signalment has occupied man's mind for centuries. The anthropometrical signalment (consisting of exact measurements of height, reach of outstretched arms, length and width of head, etc.), the descriptive signalment (including precise observations of the color of eyes, hair and complexion), and the pathological signalment (localization and description of peculiarities such as deformities, scars, tattoos, etc.,) have been recorded and used for the purpose of identifying the individual.

With the introduction of dactylography or finger-printing and the Henry classification system, a simple and reliable means for establishing and verifying the signalment of an individual was found. The scientific study of skin ridge patterns also known as dermatoglyphics has been extended to cover the skin ridges of other body areas such as palms and feet.

Presently used dactylographic techniques leave much to be desired. In these methods printer's ink is required to be applied to the fingers, palms, or feet from which and imprint is taken by subsequently transferring the ridge patterns by contact printing methods which are subject to many errors and inconveniences.

The contact printing process requires the services of a skilled technician trained in the correct imprinting procedure. To make sure that the ridge pattern is correctly printed, the technician must transfer the critical areas of the body part to a recording medium by contacting the inked body part to that medium and employing a specific rolling motion to avoid smearing of the delicate skin ridge pattern.

In view of these and such other factors as the skills required in the execution of this process, the bodily contact required, the humiliation on the part of the individual involved by being soiled with printer's ink, the problem of printing ink pads acting as transfer agents for disease carriers which is a recognized risk in hospitals where the signalment of new born babies is recorded by foot printing, and the necessity of utilizing special cleaning compounds and tissue, it can readily be seen that established dactylographic techniques have significant disadvantages. Past efforts to acquire fingerprints directly by optical means have been limited to complex cameras utilizing special wide angle lenses and folded light paths. These cameras form a magnified ridge pattern image of one finger on a tilted photographic plate. Their usefulness is restricted to the detailed study of limited singular skin areas.

In my copending application filed December 24, 1962 entitled "A Signalment Recording Apparatus," Serial No. 246,817, I have described methods and apparatus for taking an imprint of a skin area of a body part by pressing such skin area through a suitable coupling medium against the outside of a totally reflecting flat surface of a visually transparent denser medium whereby the total reflection of an illuminant at the surface of the denser medium is frustrated at the points of intimate contact.

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The image of the ridge pattern of the skin area thus appears against the light background of the illuminant on the totally reflecting surface. The image thus appearing, however, is not the image of the print but rather the image of the ridge pattern being side-reversed in relation to its imprint. For convenience it is therefore desirable to fold the optical light path in a manner permitting the required additional side reversal in order to obtain print patterns rather than ridge patterns. In my copending invention this image formation and side reversal are performed by a novel element separate and extraneous to the photosensitive recording apparatus which avoids the necessity of employing special, expensive, and non-conventional camera equipment.

When one attempts to simultaneously acquire the ridge patterns of all the fingers of a human hand on a flat surface it becomes apparent that the thumb pad is tilted in relation to the flat surface. This fact is well known and is the cause for the special manipulations required in fingerprinting by the ink method. As a matter of fact in the average adult it is impossible to twist the thumb sufficiently to permit the simultaneous imprinting of all fingers by any method without inflicting pain.

Further investigation of the physiology of the human hand revealed that the capacity of the human thumb of being so moved that its tip can touch the tip of any finger without undue effort (making it apposable), not only is the distinction between man and ape but also permits the acquisition of finger and thumb ridge pattern images by the method of my present invention.

It is therefore an object of this invention to provide improved means and methods for displaying and/or recording the signalment of an individual in an economical and efficient manner.

Another object of this invention is to provide improved means and methods for recording the signalment of an individual which does not require bodily contact with a recording medium such as ink or the like.

Another object of this invention is to provide improved means and methods of identification which are simple and rapid in operation.

Yet another object of this invention is to provide improved means and methods for acquiring, transmitting, displaying, and/or recording the signalment elements of the finger ridge patterns of the thumb and fingers of the human hand simultaneously.

Still another objective of this invention is to provide improved means and methods for the simultaneous acquisition of the multiple print images of the digits of the human hand by means of a grasping motion between the apposable thumb and the fingers.

Another object of this invention is to provide means and methods for acquiring, transmitting, displaying, and/or recording the signalment elements of the finger ridge patterns of the thumb and fingers of the human hand in combination with facial images.

Still another objective of this invention is to acquire and record in an error-free manner ridge patterns of the digits of the human hand in their true positional relationship with each other while also recording the facial image of the individual.

These and other objectives and advantages are realized by my invention which provides a single recording apparatus which utilizes optical means for portraying skin ridge patterns of individuals. A display of both thumb and finger prints is simultaneously obtained by means of a combination of optical elements which utilize the natural positions of the relaxed hand with the thumb apposable to the fingers and permit the acquisition of all the ridge pattern images of a hand from the grasping action of that hand. This combination of optical elements, which shall be called a "ridge pattern block" for the pur-